



**Supplementary Figure S3.** Immunoblot analysis of HEK293 cells overexpressing (a) fusion ZNF700-MAST1 using anti-V5 antibody, and (b) full length (FL) MAST2 using anti-DDK antibody. (c) qPCR validation of TERT-HME1 cells overexpressing fusion MAST1 and FL-MAST2. (d) Immunoblot analysis of TERT-HME1 cells overexpressing fusion MAST1 and (e) FL-MAST2 proteins. (f) Cell proliferation assay of TERT-HME1 cells overexpressing fusion MAST1, FL-MAST2, and vector control. Cell numbers are shown at the y-axis over the indicated time course. (g) Wound healing assay using the Incucyte system. Polyclonal populations of TERT-HME1 cells overexpressing fusion MAST1, FL-MAST2, or vector control were assessed for their ability to close wound areas over a 24 hr time course. (h) *In vivo* chicken chorioallantoic membrane assay of TERT-HME1 cells overexpressing fusion MAST1 or FL-MAST2 compared to vector control. (i) qPCR validation of *MAST2* and *ARID1A-MAST2* knockdown using *MAST2* siRNA in MDA-MB-468 cells. (j) qPCR validation of *MAST2* knockdown in fusion negative BT-483, H16N2, and TERT-HME1 cells. Validation of *MAST2* knockdown in MDA-MB-468 cells by (k) qPCR and (l) anti-MAST2 immunoblot. (m) Flow cytometric analysis of MDA-MB-468 cells treated with scrambled shRNA or *MAST2* shRNA. (n) Percentage distribution of the MDA-MB-468 cells in different phases of the cell cycle after treatment with either the scrambled shRNA or *MAST2* shRNA. (o) Chicken chorioallantoic membrane assay showing tumor weight of MDA-MB-468 cells treated with either scrambled shRNA or *MAST2* shRNA. (p) qPCR analysis of *ARID1A-MAST2* fusion and *ARID1A* transcripts in MDA-MB-468 cells after treatment with *ARID1A-MAST2* fusion specific siRNA. Cell proliferation rates of (q) MDA-MB-468, (r) TERT-HME1, and (s) MDA-MB-453 cells upon treatment with *ARID1A-MAST2* fusion specific siRNA.